Vitamens - growth.

Vitamen A - fat soluble, butter, egg yolk, milk, green-leaf vegtables, liver, kidney. not in lean meats.
- lack of it - susceptability to diseases

Vitamen B - tubers, leafy vegtables, fruits, yeast, grains, peas, beans, natural fresh foods.
- partially destroyed by heating.
- lack of it - nervous diseases
- beriberi.

Vitamen C - very unstable.
raw fruits & vegtables.
- prevents scurvy.
- milk contains it
- when pasteurized losses it.

Vitamen D - not distributed among foods.
- sunlight contains it.
oils, fats of fish
- lack of it causes rickets -
because of shortage of calcium & phos.

Vitamen E - whole wheat, lettuce, lean meat.
- important in reproduction.

Vitamen G - yeast, milk, fruits, lean meats.
- lack of it causes pellegra.

1 lb. meat - 450 gr.
protein 20 %
fat 12 %
water 68 %.

percent of protein $\frac{20}{100} \times 450 = 90$ gr.

" " fat $\frac{12}{100} \times 450 = 54$ gr.

" " water $\frac{68}{100} \times 450 = 306$ gr.

1 gr. protein contains 4.1 cal.
90 gr. " " $90 \times 4.1 = 369$ cal.

1 gr. fat contains 9.3 cal.
54 gr. " " $54 \times 9.3 = 502.2$ cal.

Total number of calories in meat - 871.2 cal.

Mechanical Aspects of Digestion.

Teeth - crown - hard layer of white enamel.
- dentyne.
- pulp (blood vessels + nerves)

neck
root.

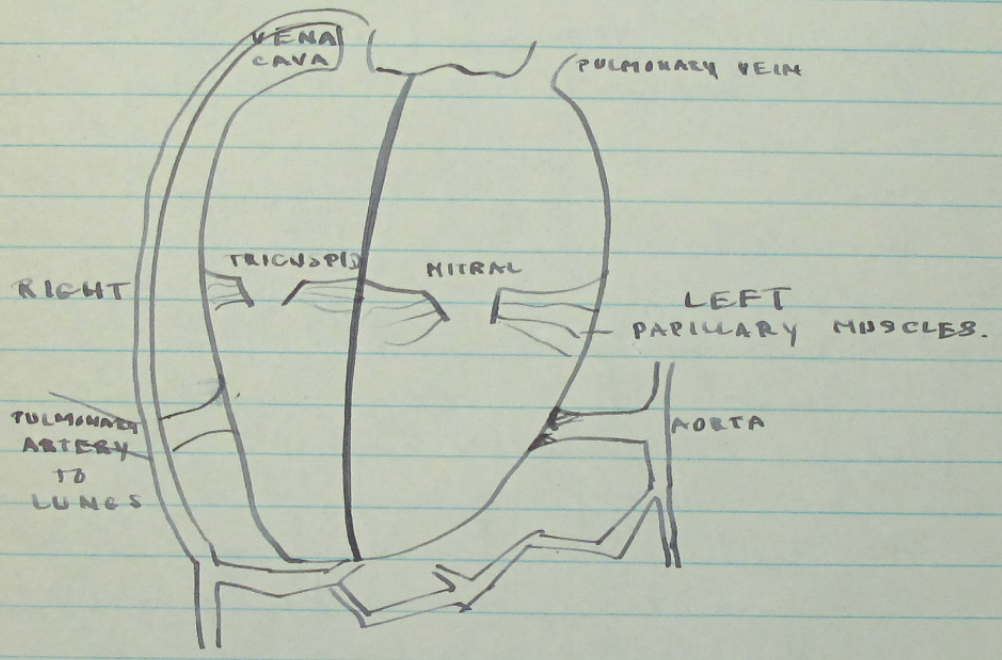
Sets - temporary (20) & permanent. (32)
Cementum - between the root & the jaw-bone.
Teeth - incisors
canines
bicuspids
molars.

Food passes between:
teeth - mastication.
esophagus - peristaltic waves.
stomach - muscle movements.
small intestine - 2 layers of muscle.
- segmenting movements - pinches food.
automatic / pendular movements.
reflexes \ peristaltic waves.

Metabolism - burning of food in body.
- blood carries O_2 & glycogen.
- red blood corpuscles carry O_2.
O_2 & hemoglobin - combination of O_2 & hemoglobin.
Glycogen & O_2 combined - produce heat, light
waste - (lactic & carbonic acid)

Circulatory System.

Arteries, veins, between arteries + capillaries
arterioles venules " veins + "
haemoglobin + O_2 - oxi-haemoglobin.
L + R. sides quite separate.



Coronary - through heart to vena cava.
- supplies muscles of heart.

Spleen - stores red corpuscles or ellet.

Red corpuscles - manu. in marrow of long bones
- develop from nucleus - nucleus
- disappears + colour gained later
- life 60-90 days.
- dissolved red corp. go to spleen.

macrophage - amoeba - present in spleen + dissolve dead tissue.

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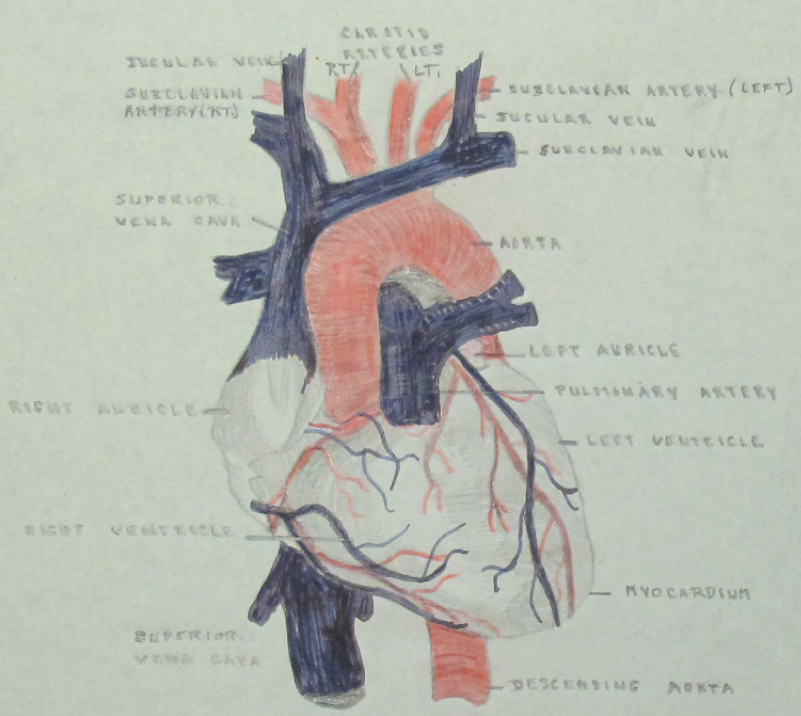
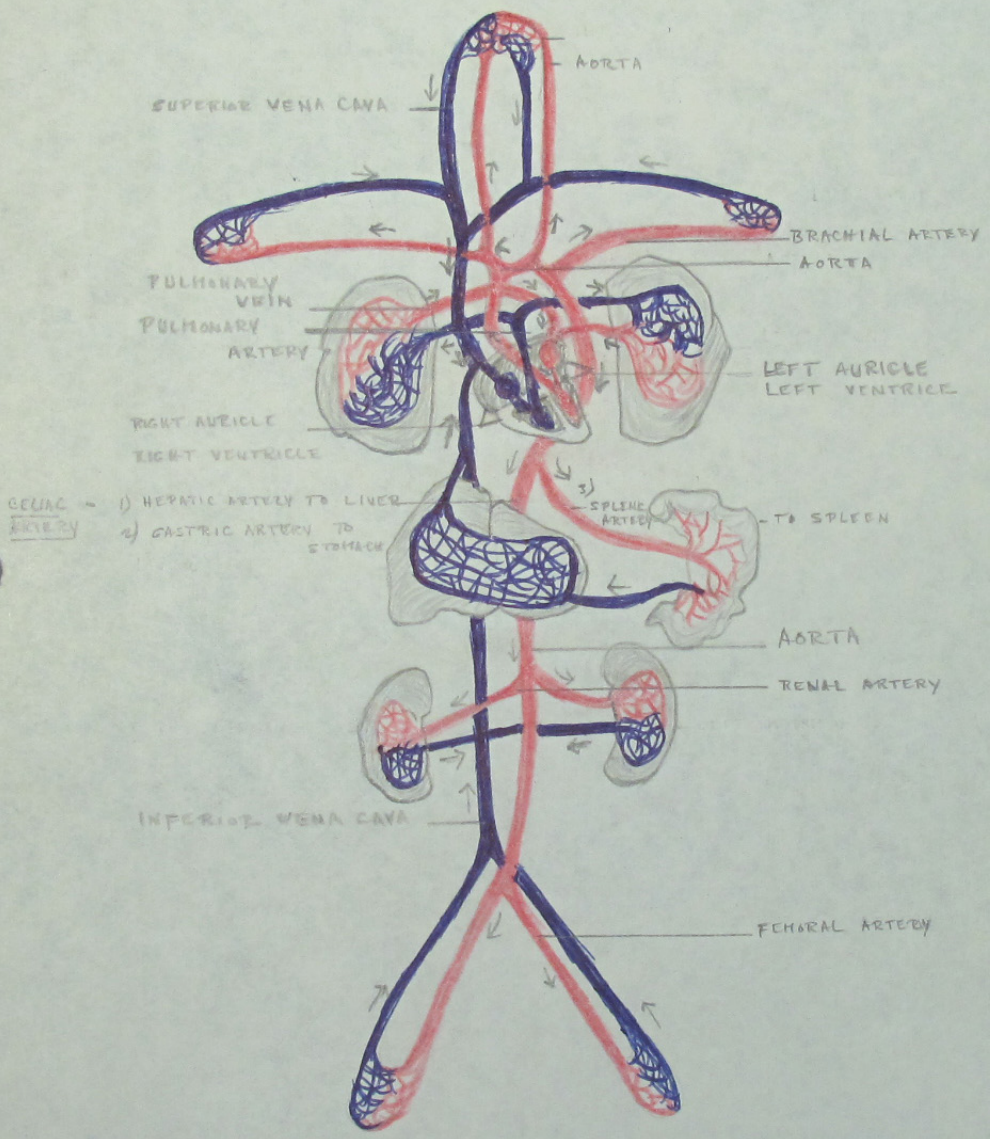
THE HEART.


CAROTID ARTERIES
RT.
LT.
JUGULAR VEIN
SUBCLAVIAN ARTERY (RT.)
SUBCLAVIAN ARTERY (LEFT)
JUGULAR VEIN
SUBCLAVIAN VEIN
SUPERIOR VENA CAVA
AORTA
LEFT AURICLE
PULMONARY ARTERY
RIGHT AURICLE
LEFT VENTRICLE
RIGHT VENTRICLE
MYOCARDIUM
INFERIOR VENA CAVA
DESCENDING AORTA

III

DIAGRAM OF SYSTEMIC AND PULMONARY CIRCULATION.



PORTAL SYSTEM

SPLENIC VEIN - SPLEEN
PORTAL VEIN - LIVER
GASTRIC VEIN - STOMACH

- r. corpx. produced on gas poisoning.
- CO - affinity for haemoglobin.

hemorrage - internally + externally.
- ¼ of blood can be lost.
- sudden loss - pressure lowered.
- thirst, pale face, glassy eye, tongue out, mental disturbances, restlessness - then unconsciousness.

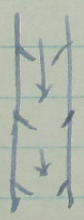
protection - blood clots
- blood sent to brain, heart, lungs.
- spleen contracted
- fluid drains to blood stream.

cure - salt (saline solution) evens density of body fluid, supplies bulk.
- blood transfusion.

Haemophilia - bleeder.

blood - acid & alkaline.
- stomach acid.
- disease brings out acid condition.

6 pt in body - 15 gallons a minute.

vein  can't back up.

2 tests of heart beat
systolic (contraction) whole heart beat
diastolic (relaxation)

pressures. ⅕ sec. a beat. lub-dub.

cardiac muscle reacts to "all or none" law.
muscle fibres all contract.

Cardiac Cycle
1) Auricles fill with blood
ventricles relaxed
valves closed.
2) Valves between open.
blood pours into relaxed ventricles.
3) Auricles contract.
ventricles fill.
4) Auricles contract
arterial valves open.

Systole - contraction - highest.
diastole - relaxation - lowest.

Venous blood promoted to flow by muscular activity & breathing.

2 circulations - systemic - all but pulmonary.
- pulmonary - just pulmonary.
- portal - stomach.
portal vein
liver
hepatic vein
~~R. auricle~~
inf. vena cava.
R. auricle

sub-clavian
carotid

~~innominate~~
innominate.

Arteries. Upper Extremity.

Sub-clavian -
-arches above clavicle
from sterno-clavicular joint - arches above clavicle & ends at outer border of 1st rib.
Thyro-cervicle trunk - from which branches go round scapula.
anastomosis - joining up - around the scapula

Axillary -
ends extends from outer border of 1st rib - to lower border of teres major.
Subscapular - largest branch.
Ant. Humeral Circumflex.
Post. Humeral Circumflex.

Subscapular - ~~unites with~~
- supplies lower part of scapula.
- anastomoses with branches from sub-clavian.

Ant. Humeral Circumflex
- winds round neck of humerus from in front.

Post. Humeral Circumflex
- winds round surgical neck of humerus from the back.

Brachial -
- extends from lower border of teres major to just below bend of elbow.
- lies along medial border of biceps.

One branch - profunda brachii.
- accompanies radial nerve in spiral

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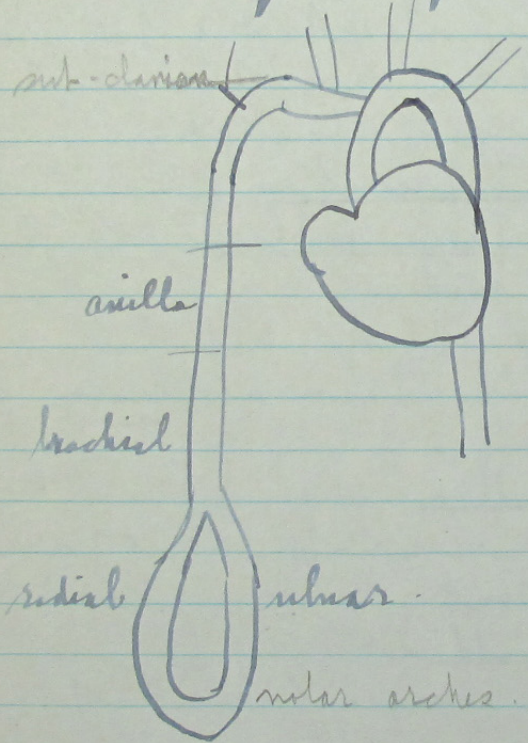
apinst humerus in radial groove.

Radial artery & bifurcates below elbow.
- lateral side of forearm, just medial to brachio-radialis muscle.
- at wrist, lower end superficial. lateral to F. C. R.

Volar - back of thumb to palm of hand, between 2 heads of 1st. interosseus muscle to unite with ulnar artery to form deep volar arch.



ulnar - deep.
radial - superficial

Ulnar artery - larger than radial,
- lies under cover of muscles all the way.
- at the wrist sends branches to back of hand.

Deep - at level of pisiform turns across